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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/749,829	12/30/2003	Paul A. Hoisington	09991-148001	9375
26161	7590	11/22/2005	EXAMINER	
FISH & RICHARDSON PC			DO, AN H	
P.O. BOX 1022			ART UNIT	
MINNEAPOLIS, MN 55440-1022			PAPER NUMBER	
			2853	

DATE MAILED: 11/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/749,829

Applicant(s)

HOISINGTON ET AL.

Examiner

An H. Do

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 13-15, 19, 21, 22 and 29-33 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-18, 20 and 23-28 is/are allowed.
- 6) ☒ Claim(s) 1-4, 8 and 10-12 is/are rejected.
- 7) ☒ Claim(s) 5-7 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/01/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The Response filed on 07 November 2005 has been acknowledged.

Election/Restrictions

1. Applicant's election without traverse of Species A, claims 1-12, 16-18, 20 and 23-28 in the reply filed on 07 November 2005 is acknowledged.
2. Claims 13-15, 19, 21, 22 and 29-33 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 07 November 2005.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 01 November 2004 was filed and is being considered by the examiner.

Specification

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The abstract of the disclosure is objected to because the word "20763729.doc" in the last line should be deleted. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 4, 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamori et al (US 4,358,781).

Yamamori et al disclose in Figures 1 and 3A the following claimed features:

Regarding claim 1, a drop ejection device (Figure 1), comprising: a flow path (connecting channel 18) in which fluid is pressurized to eject drops from a nozzle opening (20), a piezoelectric actuator (24) for pressurizing said fluid, and one or more waste fluid control apertures (Figure 3A shows air chamber portions 15a and 15b) proximate (column 3, lines 60-61) the nozzle opening (24), the aperture () being in communication with a vacuum source (12).

Regarding claim 4, wherein the control apertures (Figure 3A shows air chamber portions 15a and 15b) are in communication (via nozzle 12) with the flow path (connecting channel 18) in which fluid is pressurized.

Regarding claim 10, further including a nonwetting coating (annular surface 29) proximate the nozzle opening (20).

Regarding claim 11, wherein the flow path (connecting channel 18), nozzle opening (20), and control aperture (Figure 3A shows air chamber portions 15a and 15b) are defined in common body (Figure 1, head housing 10a).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 2, 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamori et al (US 4,358,781) in view of Le et al (US 4,613,875).

Yamamori et al disclose the claimed invention except for reciting the fluid control apertures are spaced from the nozzle opening by about 200% to about 1000% of the nozzle opening width or less; and the width of the nozzle opening is about 200 microns or less.

Le et al teach in the Table in column 7 that the fluid control apertures (24) are spaced from the nozzle opening by about 200% to about 1000% of the nozzle opening

width or less (element C); and the diameter of the nozzle opening (23) is about 30-45 (element A) microns which is within the claimed range of 200 microns or less.

It would have been obvious to one having ordinary in the art at the time the invention was made to have the fluid control apertures spaced from the nozzle opening by about 200% to about 1000% of the nozzle opening width or less; and the diameter of the nozzle opening about 200 microns or less, as taught by Le et al into Yamamori et al, for the purpose of obtaining the optimal results (column 7, lines 54-60).

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamori et al (US 4,358,781) in view of Howkins (US 4,459,601).

Yamamori et al disclose the claimed invention except for reciting the body is a silicon material.

Howkins teaches in Figure 1 the body (34) is a silicon material (column 5, lines 16-17).

It would have been obvious to one having ordinary in the art at the time the invention was made to have the body made of a silicon material, as taught by Howkins into Yamamori et al, for the purpose of obtaining the flexibility and tensile strength over a wide temperature range.

Allowable Subject Matter

11. Claims 16-18, 20 and 23-28 are allowed.

The following is an examiner's statement of reasons for allowance:

The primary reason for the allowance of claims 16-18 and 20 is the inclusion of the limitation of a drop ejection device that includes a fluid control aperture having a

width of about 30% or less than the width of the nozzle opening. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 23-28 is the inclusion of the method step of drawing waste fluid through the aperture in an amount of about 5% or less of the fluid ejected an operating vacuum of about 5 inches of water or less. It is this step found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

12. Claims 5-7 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hoisington (US 5,757,391) discloses a high frequency drop on demand ink jet system having variable impedance characteristic to provide maximum drop ejection rates. Silverbrook (US 6,235,212) and Silverbrook (US 6,264,307)

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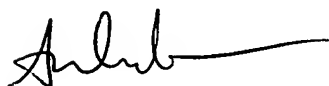
disclose an inkjet printhead having a plurality of etchant holes around the ejection nozzle.

Contact Information

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143. The examiner can normally be reached on Monday-Friday (Flexible).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



An H. Do
November 17, 2005